

Secret**National
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Assessment
Center**

International Energy Biweekly Review

18 October 1978

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INTERNATIONAL ENERGY BIWEEKLY REVIEW**18 October 1978**

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INTERNATIONAL ENERGY BIWEEKLY REVIEW

Overview

Two months before their December semiannual ministerial conference in Abu Dhabi, the 13 OPEC countries are divided on the question of a 1979 crude oil price increase. Most members favor an increase of at least 10 percent, but Saudi Arabia and Iran—the two states that produce nearly one-half of OPEC's crude oil and that engineered the price freeze in 1978—are still keeping their options open. Riyadh and Tehran appear to be leaning toward an increase on the order of 5 percent in January and perhaps another relatively small increase at midyear. A two-stage increase that adds up to 10 percent or more probably would be grudgingly accepted by OPEC price hawks. With the Saudis firmly opposed to linking future oil price changes to the dollar's movement against a basket of currencies, this widely discussed measure probably will get little attention in Abu Dhabi.

* * * * *

The depreciation of the dollar has led to reduced oil import costs for West Germany, Japan, and France among other countries. Consumers of oil products in Germany and Japan have benefited from the crude cost reduction as Bonn and Tokyo generally avoided the imposition of higher taxes that would cut into company profits or would promote conservation. Paris, on the other hand, taxed away much of the potential benefit to French consumers.

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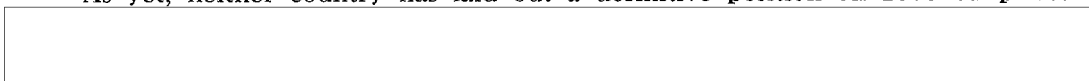
OPEC PRICES: STATE OF PLAY

Most OPEC countries are seeking a crude oil price increase of 10 percent or more in January 1979, but Saudi Arabia and Iran—the two nations responsible for recent price restraint—remain uncommitted. In both Riyadh and Tehran, serious consideration is being given to an increase of about 5 percent in January, possibly followed by a hike of similar magnitude at midyear. OPEC price hawks probably would accept such a formula at December's ministerial meeting in Abu Dhabi—albeit reluctantly.

Saudi Arabia and Iran

Before the last two regular OPEC meetings—at Caracas in December 1977 and Geneva in June this year—Saudi Arabia made clear in repeated public statements its commitments to a price freeze through 1978. Tehran departed from its traditional hawkishness on oil prices to join the Saudis. The current Iranian attitude—apparently favoring a moderate 1979 price increase—is again similar to the Saudi position. Nevertheless, past Iranian zeal for large price increases and the significant gap between the two countries' financial situations suggest that the commitment to price moderation is considerably stronger in Riyadh than in Iran.

As yet, neither country has laid out a definitive position on 1979 oil prices.



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Both Riyadh and Tehran continue to weigh various political and economic factors. High on their lists of considerations are the bilateral ties with Washington, Middle East developments, strength of the oil market, ability of western economies to absorb an oil price increase, erosion of OPEC countries' purchasing power as a result of inflation, and depreciation of the dollar. The high value both Riyadh and Tehran place on good links with the United States, slow economic growth in the West, and the generally soft oil market (notwithstanding current anticipatory buying in advance of the December price decision) are influencing the two oil powers to be more moderate than other OPEC countries on 1979 prices. This moderation is reflected in several comments by high Saudi and Iranian officials:

- Yamani several times has publicly stated that prices should be raised in small doses to make the increases easier for consuming nations to absorb.



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- In late September, Saudi state oil company governor Taher, representing his country at an OAPEC meeting in Oslo, said publicly that Riyadh is willing to go along with a "reasonable" price increase for 1979. He added that a 5 percent increase would be reasonable.

- High Iranian officials have privately indicated to US officials that they expect the Iranian position on oil prices to be close to that of Saudi Arabia.

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- An Iranian official said in late August that Iran will not oppose Saudi Arabia on oil prices or take a position detrimental to US-Iranian relations unless there are extraordinary benefits to Iran in doing otherwise.

We have no evidence of any internal differences within the Saudi government on the oil price issue. In any event, the final decision on oil prices in Riyadh, as well as Tehran, will be made at the highest level—by Crown Prince Fahd and King Khalid in Saudi Arabia and by the Shah in Iran.

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Other OPEC Members

The United Arab Emirates will continue to side with Saudi Arabia. Although UAE Oil Minister Utayba occasionally speaks independently, as earlier this year when he proposed his own formula for linking oil prices to a basket of currencies, ruler Sheik Zayid has assured Saudi Arabia of UAE support on all important oil decisions.

The OPEC members currently lobbying hardest for a price increase are Kuwait and Venezuela. The oil ministers of both countries have recently toured OPEC capitals trying to win acceptance of an increase of 10 percent or more. Kuwait's Ali Khalifa al-Sabah, named his country's petroleum minister early this year and elected OPEC President at the midyear conference, spearheaded earlier efforts to get a price increase for second half 1978. More recently, he and Venezuelan Minister Hernandez tried to arrange support for a special ministerial meeting to raise prices in the fourth quarter. With Saudi Arabia and Iran blocking both moves, Khalifa and Hernandez have redirected their efforts toward a 1979 price hike. In October, Khalifa publicly claimed that "no one in OPEC" will be satisfied with a price rise of only 5 percent. Privately, the Minister told the US Ambassador in Kuwait that he would call for a 15

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percent price increase at Abu Dhabi and indicated he would not agree to anything less than 10 percent. Both Khalifa and Hernandez cite inflation and the depreciation of the dollar as overwhelming arguments for a sizable increase.

Kuwait and Venezuela can count on active support for a large price hike from the traditionally most hawkish faction in OPEC—Iraq, Libya, and Algeria. All three want a larger boost than 10 percent. Each is little concerned either with the health of Western economies or with antagonizing the Saudis. Nigeria, Indonesia, and Ecuador all have pressing revenue needs and reportedly favor an increase of at least 10 percent, but they are taking a passive role and are willing to accept less. The remaining OPEC members—Gabon and Qatar—have no influence over the December decision.

Possible Outcome

On balance, we anticipate the OPEC majority will again be forced to give in to Saudi Arabia and Iran and accept a smaller increase than they prefer in January. To get agreement, the Saudis and Iranians appear willing to hold out hope of a second price increase in mid-1979.

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THE EFFECT OF LOWER CRUDE OIL IMPORT PRICES ON REFINED PRODUCT PRICES IN JAPAN, WEST GERMANY, AND FRANCE

Due to the depreciation of the dollar and the fact that oil prices are dollar denominated, crude oil import costs have fallen in countries whose currencies have appreciated. The purpose of this study is to present relevant crude oil and product prices and to briefly discuss their determination. Importing country tax and regulatory policies are also discussed.

Oil refiners, middlemen, and retailers in West Germany and Japan have passed on to their consumers varying shares of the reduced oil import costs resulting from appreciating dollar exchange rates in the period January 1977–June 1978. Tokyo and Bonn have generally shied away from increasing oil taxes either to hold down company/dealer profits or to maintain price levels in the interest of conservation. In June, however, Tokyo imposed a 3.5-percent ad valorem tax on crude oil and imported petroleum products. Paris has taxed away much of the potential exchange rate benefit to French consumers—a smaller benefit than in the case of Japan and West Germany and a benefit that would have been reflected in relatively level retail prices. French retail oil product prices have generally increased sharply across the board.

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Oil Price Trends

Index: Jan 1977=100							
		Price Exrefinery					
	Exchange Rate Foreign Currency Per \$	Crude Oil Import Price	Heavy Fuel Oil	Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil
France	Francs						
Jan 1977	4.9694	100.0		100.0	100.0	100.0	100.0
Jun 1977	4.9401	105.5		104.9	104.6	107.2	107.2
Dec 1977	4.7935	104.9		104.9	104.6	107.2	111.6
Jun 1978	4.5800	100.0		98.8	99.2	103.7	108.9
West Germany	Deutsche marks						
Jan 1977	2.3904	100.0		100.0		100.0	100.0
Jun 1977	2.3543	100.5		99.1		99.9	96.3
Dec 1977	2.1526	96.6		96.9		100.1	98.6
Jun 1978	2.0841	91.4		97.0		98.0	91.1
Japan	Yen						
Jan 1977	291.08	100.0	100.0	100.0			100.0
Jun 1977	272.98	101.1	105.3	100.2			100.9
Dec 1977	241.28	90.6	100.2	94.7			92.0
Jun 1978	226.40	82.6	89.1	79.1			85.9

Oil Price Trends (Cont'd.)

Index: Jan 1977=100									
	Wholesale Price					Retail Price			
	Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil	Heavy Fuel Oil	Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil
France									
Jan 1977					100.0	100.0	100.0	100.0	100.0
Jun 1977					108.0	104.8	105.3	106.7	106.7
Dec 1977					112.8	104.8	105.3	106.7	110.4
Jun 1978					111.9	118.7	119.1	120.9	121.9
West Germany									
Jan 1977	100.0	100.0	100.0	100.1	100.0	100.0	100.0	100.0	
Jun 1977	99.3	98.6	99.3	97.2	92.1	97.8	97.4	99.4	
Dec 1977	97.0	94.6	100.1	98.3	98.0	97.3	96.9	99.4	
Jun 1978	96.9	94.2	96.8	91.0	90.2	99.5	97.9	101.1	
Japan									
Jan 1977	100.0			100.0	100.0	100.0			100.0
Jun 1977	100.7			100.0	100.0	100.0			100.1
Dec 1977	97.4			95.5	100.5	97.5			100.3
Jun 1978	92.4			89.2	94.8	89.3			96.5

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With market conditions basically setting product prices, changes in crude costs are not always fully reflected in product prices. Moreover, the lack of detailed data on refining costs, distribution and selling expenses, complete product price lists, refinery output mix, and the like, prevent a precise breakdown of the allocation of exchange rate gains.

Japan

Between January 1977 and June 1978 the dollar depreciated 22 percent vis-a-vis the yen, and crude oil import prices fell 17 percent. Crude import prices remained fairly stable in January-September 1977 as the roughly 9-percent OPEC price increase was offset by a similar decline in the value of the dollar vis-a-vis the yen. In September 1977-June 1978, however, the dollar has continued to fall resulting in a steady decline in the crude import prices.

Between January 1977 and June 1978 the weighted average exrefinery price for three major products (gasoline, heating oil, and heavy fuel oil) fell about 14 percent

Japan: Oil Prices

	Exchange Rate (Yen per \$)	Crude Oil Import Price (Yen per Kiloliter)	Price Exrefinery (Yen per Kiloliters)		
			Regular Gasoline	Heating Oil (Kerosene)	Heavy Fuel Oil
1977					
Jan	291.08	23,220	51,100	32,600	24,700
Feb	285.07	23,624	51,100	32,600	25,200
Mar	280.57	23,806	51,000	32,560	25,100
Apr	275.12	23,462	51,000	32,800	26,300
May	277.62	23,478	51,400	32,900	26,000
Jun	272.98	23,466	51,200	32,900	26,000
Jul	264.82	22,750	50,500	32,200	26,000
Aug	266.64	22,771	50,300	32,450	25,800
Sep	267.04	23,065	50,600	32,600	25,750
Oct	255.07	22,716	49,600	32,300	25,100
Nov	244.82	21,616	49,200	31,300	25,200
Dec	241.28	21,036	48,400	30,000	24,750
1978					
Jan	241.13	20,868	47,300	29,300	23,200
Feb	240.28	20,984	46,300	28,500	23,500
Mar	231.51	20,579	45,200	28,500	23,000
Apr	221.51	19,370	43,600	28,300	22,000
May	221.68	19,419	43,000	28,300	22,000
Jun	226.40	19,185	40,400	28,000	22,000

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Japan: Oil Prices (Cont'd.)

	Wholesale Price (Index: 1975=100)			Retail Price	
	Regular Gasoline	Heating Oil (Kerosene)	Heavy Fuel Oil	Regular ¹ Gasoline (Yen per Liter)	Heating Oil ² (Kerosene) (Yen per 18 Liters)
1977					
Jan	112.0	117.4	111.1	122	790
Feb	112.0	117.4	111.1	122	790
Mar	112.0	117.4	111.1	122	792
Apr	112.8	117.4	111.1	122	792
May	112.8	117.4	111.1	122	791
Jun	112.8	117.4	111.1	122	791
Jul	112.8	117.4	112.9	122	791
Aug	111.1	117.4	112.9	122	791
Sep	111.0	117.4	111.7	121	791
Oct	110.4	117.4	111.7	121	791
Nov	110.1	116.2	111.7	120	795
Dec	109.1	112.1	111.7	119	792
1978					
Jan	108.3	109.6	111.7	117	772
Feb	107.6	109.2	109.8	116	773
Mar	106.7	106.1	105.3	114	768
Apr	105.9	105.5	105.3	113	768
May	105.0	104.9	105.3	112	766
Jun	103.5	104.7	105.3	109	762

¹ Including a 43-yen per 18 liters tax.² There is no tax on heating oil or heavy fuel oil.

while the weighted average retail price* fell about 7 percent. Retail gasoline prices registered the sharpest decline.

There is mounting pressure on Japanese refiners and wholesalers from consumers and heavy petroleum users in industry and business to pass on a large portion of exchange rate gains. In 1977, after-tax profits for the 14 largest refining companies in Japan increased by 17 percent largely because of the appreciation of the yen. Oil sales increased by only about 5 percent.

In August 1978, Tokyo decreed that electric power and city gas companies pass on part of the exchange rate gain to consumers. Subsequently, the government approved applications filed by eight electric power and three city gas companies to lower electricity and gas rates over the period of October 1978-March 1979. The

* Wholesale prices for heavy fuel oil are treated as retail prices as well as wholesale for all countries in this article because the end user generally purchases from the wholesaler.

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companies also specified that they would not raise their rates through March 1980—the end of fiscal year 1979 in Japan. According to the companies, roughly 70 percent of the exchange rate gains will be passed on to industrial and household consumers at an approximate ratio of 7 to 3 in favor of industrial users. The refiners have either announced or are expected to soon announce price reductions for naphtha, kerosene, and liquefied petroleum gas.

Tokyo generally allows the market to determine oil prices, but periodically it has established guidelines for exrefinery prices to eliminate what it believed were distortions. In early 1974, for example, after the large OPEC-mandated increase in the price of crude oil, Tokyo briefly froze retail prices, and in December 1975, guidelines were introduced to help refiners attain higher prices when oil companies, unable to pass on rising costs to consumers, were facing financial difficulties. All guidelines were removed in May 1976. The 1978 increase in the tax on crude and imported products was imposed to reduce the exchange rate gains accruing to the companies and to help finance the government's oil storage program.

West Germany: Oil Prices

Index: 1970=100

	Exchange Rate (DM Per \$)	Crude Oil Import Price	Price Exrefinery			Wholesale Price				
			Regular Gasoline	Diesel Fuel	Heating Oil	Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil	Heavy Fuel Oil
1977										
Jan	2.3904	381.7	164.0	157.0	254.2	167.5	157.3	160.7	268.0	255.2
Feb	2.4042	387.3	162.5	159.0	259.1	165.7	155.6	161.9	274.1	260.4
Mar	2.3914	388.1	160.8	157.4	251.3	163.9	151.6	161.3	262.3	257.9
Apr	2.3679	388.8	161.7	158.0	252.9	164.5	151.5	161.1	268.1	249.3
May	2.3583	386.8	163.4	157.3	246.4	167.4	155.7	160.7	262.0	239.2
Jun	2.3543	383.5	162.5	156.9	244.7	166.3	155.1	159.6	260.5	235.1
Jul	2.2840	378.7	161.3	157.0	243.9	164.9	152.6	159.4	260.8	236.0
Aug	2.3153	381.8	159.6	156.3	241.6	163.0	149.7	158.8	257.1	234.5
Sep	2.3237	385.0	160.1	156.0	240.6	163.4	150.9	158.9	255.6	234.4
Oct	2.2777	381.7	159.4	156.7	248.2	162.5	148.7	160.0	259.2	244.0
Nov	2.2415	373.9	159.5	157.0	250.6	163.0	149.5	160.7	260.2	251.7
Dec	2.1526	368.6	158.9	157.2	250.7	162.5	148.8	160.8	263.5	250.0
1978										
Jan	2.1184	357.8	157.5	155.9	241.9	161.2	146.0	159.9	254.5	245.9
Feb	2.0755	355.2	157.0	154.7	237.5	160.6	143.1	157.4	247.4	234.0
Mar	2.0341	344.7	158.3	154.2	231.7	161.9	147.1	156.4	243.1	227.5
Apr	2.0404	345.5	158.1	153.9	230.9	161.9	147.2	154.6	242.1	223.2
May	2.1060	347.9	159.1	154.8	233.7	162.0	148.0	156.8	247.9	228.3
Jun	2.0841	348.8	159.0	153.8	231.7	162.3	148.2	155.6	244.0	230.1

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West Germany: Oil Prices (Cont'd.)

DM Per 100 Liters									
	Retail Price			Tax			Price Excluding Tax		
	Regular Gasoline	Premium Gasoline	Diesel Fuel	Regular Gasoline	Premium Gasoline	Diesel Fuel	Regular Gasoline	Premium Gasoline	Diesel Fuel
1977									
Jan	91.0	97.0	89.0	53.0	53.0	50.0	38.0	44.0	39.0
Feb	89.5	94.5	89.0	53.0	53.0	50.0	36.5	41.5	39.0
Mar	88.0	93.5	88.5	53.0	53.0	50.0	35.0	40.5	35.5
Apr	88.0	93.5	88.5	53.0	53.0	50.0	35.0	40.5	35.5
May	88.0	93.5	88.5	53.0	53.0	50.0	35.0	40.5	35.5
Jun	89.0	94.5	88.5	53.0	54.0	50.0	36.0	40.5	35.5
Jul	89.0	94.5	88.5	53.0	54.0	50.0	36.0	40.5	35.5
Aug	88.5	94.0	88.5	53.0	54.0	50.0	35.5	40.0	35.5
Sep	88.5	94.0	88.5	53.0	54.0	50.0	35.5	40.0	35.5
Oct	88.5	94.0	88.5	53.0	54.0	50.0	35.5	40.0	35.5
Nov	88.5	94.0	88.5	53.0	54.0	50.0	35.5	40.0	35.5
Dec	88.5	94.0	88.5	53.0	54.0	50.0	35.5	40.0	35.5
1978									
Jan	88.5	94.0	88.5	53.0	54.0	50.0	35.5	40.0	35.5
Feb	90.5	95.0	90.0	53.0	54.0	51.0	37.5	41.0	39.0
Mar	90.5	95.0	90.0	53.0	54.0	51.0	37.5	41.0	39.0
Apr	90.5	95.0	90.0	53.0	54.0	51.0	37.5	41.0	39.0
May	90.5	95.0	90.0	53.0	54.0	51.0	37.5	41.0	39.0
Jun	90.5	95.0	90.0	53.0	54.0	51.0	37.5	41.0	39.0

West Germany

Between January 1977 and June 1978, while the dollar depreciated 13 percent vis-a-vis the deutsche mark (DM) and crude oil import prices fell 9 percent, the weighted average wholesale price of four major products (gasoline, diesel fuel, heating oil, and heavy fuel oil) fell 7 percent. There was a 6-percent decline in retail prices. West German crude oil import price trends fluctuated during this period, rising in early 1977 because of the OPEC price increase and trending down thereafter as the dollar tumbled vis-a-vis the deutsche mark.

Bonn, a champion of the free market, has not interfered nor is it likely to interfere in the market to determine energy prices. Moreover, oil companies now experiencing poor profit margins would object vigorously to any action either to reduce prices or raise taxes. West German refineries are now operating at only about 60 percent of capacity compared with more than 80 percent prior to 1974. With heavy fuel oil sales during first half 1978 down 4 percent from first half 1977 levels, the 10-percent price drop since early 1977 clearly reflects market conditions more than it does a pass-through of exchange rate benefits.

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The only significant West German tax increase on oil products during the past few years was a recent doubling of the tax on home heating oil from 10 DM per ton to 20 DM per ton. This increase, part of the government's program to spur conservation in the residential sector, was passed, however, only after long debate in parliament.

France

Between January 1977 and June 1978 the dollar depreciated vis-a-vis the French franc by 8 percent. Crude oil import prices in francs at the end of this period were the same as at the beginning; they rose in the period January 1977–September 1977, reflecting the OPEC price increase as the dollar/franc exchange rate remained relatively stable, but fell 7 percent from September 1977 through June 1978 as the dollar depreciated a similar amount against the franc. Exrefinery gasoline and diesel fuel prices followed a pattern similar to crude oil prices. On the other hand, the weighted average retail price for four major products (gasoline, diesel fuel, home heating oil, and heavy fuel oil) rose nearly 18 percent mainly reflecting sharply higher taxes. If crude oil prices were the major determinant of product prices, retail product prices would have been nearly the same in June 1978 as in January 1977. Gross profits, as calculated by the French Government and defined as the retail product price less

France 1: Oil Prices

	Exchange Rate (Francs Per \$)	Crude Oil Import Price (Francs Per Ton)	Price Exrefinery (Francs Per Hectoliter)				Wholesale Price Heavy Fuel Oil (Francs Per Ton)
			Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil	
1977							
Jan	4.9694	469	62.41	68.91	48.76	48.79	460.72
Feb	4.9788	483	65.44	72.06	52.27	52.30	460.72
Mar	4.9814	497	65.44	72.06	52.27	52.30	496.00
Apr	4.9645	499	65.44	72.06	52.27	52.30	497.50
May	4.9529	501	65.44	72.06	52.27	52.30	497.50
Jun	4.9401	495	65.44	72.06	52.27	52.30	497.50
Jul	4.8507	487	65.44	72.06	52.27	52.30	497.50
Aug	4.8947	495	65.44	72.06	52.27	52.30	497.50
Sep	4.9220	505	65.44	72.06	52.27	52.30	508.08
Oct	4.8592	501	65.44	72.06	52.27	54.47	508.08
Nov	4.8538	503	65.44	72.06	52.27	54.47	508.08
Dec	4.7935	492	65.44	72.06	52.27	54.47	519.84
1978							
Jan	4.7169	484	65.44	72.06	52.27	54.47	519.84
Feb	4.8389	497	64.07	70.79	51.42	53.11	519.84
Mar	4.7135	485	63.39	70.09	51.42	53.11	519.84
Apr	4.5847	478	63.39	70.09	51.42	53.11	531.60
May	4.6512	485	63.39	70.09	51.42	53.11	531.60
Jun	4.5800	469	61.69	68.39	50.57	53.11	515.72

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France 1: Oil Prices (Cont'd)

Francs Per Hectoliter								
	Retail Price				Taxes			
	Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil	Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil
1977								
Jan	209	225	134	73.0	126.81	134.67	66.61	13.03
Feb	214	231	139	77.9	127.56	135.57	67.36	13.76
Mar	214	231	139	77.9	127.56	135.57	67.36	13.76
Apr	214	231	139	77.9	127.56	135.57	67.36	13.76
May	214	231	139	77.9	127.56	135.57	67.36	13.76
Jun	219	237	143	77.9	132.56	141.57	71.36	13.76
Jul	219	237	143	77.9	132.56	141.57	71.36	13.76
Aug	219	237	143	77.9	132.56	141.57	71.36	13.76
Sep	219	237	143	77.9	132.56	141.57	71.36	13.76
Oct	219	237	143	80.6	132.57	141.58	71.36	14.27
Nov	219	237	143	80.6	132.57	141.58	71.36	14.27
Dec	219	237	143	80.6	132.57	141.58	71.36	14.27
1978								
Jan	219	237	143	80.6	132.57	141.58	71.36	14.27
Feb	223	242	145	80.6	136.92	146.93	74.22	15.63
Mar	223	242	145	80.6	136.93	146.93	71.36	15.63
Apr	223	242	145	80.6	136.93	146.93	71.36	15.63
May	223	242	145	80.6	136.93	146.93	71.36	15.63
Jun	248	268	162	89.0	163.63	174.63	92.06	24.03
	Retail Price Excluding Taxes				Gross Profit (including distribution and selling expenses)			
	Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil	Regular Gasoline	Premium Gasoline	Diesel Fuel	Heating Oil
1977								
Jan	82.19	90.33	67.39	59.97	19.78	21.42	18.63	11.18
Feb	86.44	95.43	71.64	64.14	21.00	23.37	19.37	11.84
Mar	86.44	95.43	71.64	64.14	21.00	23.37	19.37	11.84
Apr	86.44	95.43	71.64	64.14	21.00	23.37	19.37	11.84
May	86.44	95.43	71.64	64.14	21.00	23.37	19.37	11.84
Jun	86.44	95.43	71.64	64.14	21.00	23.37	19.37	11.84
Jul	86.44	95.43	71.64	64.14	21.00	23.37	19.37	11.84
Aug	86.44	95.43	71.64	64.14	21.00	23.37	19.37	11.84
Sep	86.44	95.43	71.64	64.14	21.00	23.37	19.37	11.84
Oct	86.43	95.42	71.64	66.33	20.99	23.36	19.36	11.86
Nov	86.43	95.42	71.64	66.33	20.99	23.36	19.36	11.86
Dec	86.43	95.42	71.64	66.33	20.99	23.36	19.36	11.86
1978								
Jan	86.43	95.42	71.64	66.33	20.99	23.36	19.36	11.86
Feb	86.08	95.07	70.78	64.97	21.98	24.28	19.36	11.86
Mar	86.07	95.07	70.78	64.97	22.68	24.98	19.36	11.86
Apr	86.07	95.07	70.78	64.97	22.68	24.98	19.36	11.86
May	86.07	95.07	70.78	64.97	22.68	24.98	19.36	11.86
Jun	84.37	93.37	69.94	64.97	22.68	24.98	19.37	11.86

¹ The government sets maximum selling prices for all major petroleum products except heavy fuel oil.

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taxes and the exrefinery price, rose only moderately on sales of heating oil and diesel fuel but rose sharply for gasoline.*

Paris currently keeps a tight rein on all major petroleum product prices, except heavy fuel oil, by setting maximum selling prices. Heavy fuel oil prices were deregulated in 1976. Although Paris announced in late August plans to ease its control over oil supply sources and domestic petroleum marketing, the prices of major oil products will not be completely freed until 1 January 1980. In the meantime, Paris has established an interim, probationary period in which exrefinery prices will be recalculated periodically according to a formula that takes into account taxes, refinery costs, the dollar price of crude, and the dollar/ franc exchange rate. Crude oil price changes will be reflected exrefinery, 45 days after the change; franc/dollar exchange rates will be reflected by the government every two or three months. There will be a floor price for gasoline only. Unrestricted discounting will be allowed for residential fuel and diesel oil.

As part of the new policy, it was announced that the exrefinery price of motor fuels would drop by 6.85 centimes per liter (6 cents per gallon) as of 2 September 1978, but that this amount would be paid to the government's Energy Conservation Agency (ECA) rather than reflected in consumer prices. On 1 January 1979, this forced contribution to the ECA is to be eliminated, to the potential benefit of the consumer, but OPEC is expected to raise crude prices at that time. Moreover, the 1979 budget calls for a 4.8-percent increase in gasoline taxes on 1 January.

The government will, however, permit increased—perhaps doubled—discounts on gasoline during the probationary period. Heretofore, Paris—bowing to pressure from small retail dealers—has limited such discounts to 5 centimes per liter (4.4 cents per gallon) for regular and 6 centimes per liter (5.2 cents per gallon) for premium.

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IRAN: NUCLEAR/MILITARY PROGRAMS VICTIM TO POLITICAL UNREST

Tehran is being forced to reorder its economic priorities in light of continuing political unrest. The expensive nuclear power and military programs—traditionally most dear to the Shah and hitherto immune to cutbacks—are to bear the brunt of shifts in the allocation of resources. Although the decision has been made to free funds from these programs for rural development, improved transportation, and more social welfare projects, most of the cutbacks will not impact until the early 1980s. Indeed, in

* The French do not provide profit calculations for heavy fuel oil.

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the short run both budget expenditures and the import bill will rise faster than expected previously because of substantial wage and fringe benefit increases granted to striking public sector workers.

Bread-and-butter issues apparently have been at the heart of the recent widespread labor unrest, and observers in Iran see the hand of the Shah's religious and political opposition acting behind the scenes to manipulate workers' grievances into mass political protest against the Shah. Neither the conservatives nor the militant leftists, who also participated in recent disorders, will take much solace from the government's acknowledgment that it now finds it expedient to reconsider long-term economic goals.

The Nuclear Program

Original Iranian plans called for construction of more than 20 nuclear power reactors with a total installed capacity of 23,000 MW by 1993. With the recent cutbacks, the nuclear power construction program apparently will be limited to two reactors now being built by the West Germans at Bushehr on the Persian Gulf and two more that the French have started on the Karun River. These four plants will provide 4,200 MW of capacity. The curtailment comes months after public calls by a member of Iran's OPEC delegation, a government consultant on energy matters, and others for a reevaluation of the program. Iranian officials also reportedly doubted the need for such an ambitious program but were afraid to tell the Shah of their views.

The nuclear reactor plan was based on an unrealistic estimate of Iran's future electric power requirements and was clearly unrealizable by 1993 even with massive foreign help. The power plan, calling for 56,000 MW of electric power capacity in place by the mid-1990s, was drawn up in 1974 in conjunction with the long-term development plan and while Tehran was experiencing the heady days of bountiful oil revenues. At that time, Iran was projecting an average annual growth rate of 31 percent in electricity consumption. Instead, annual consumption increases probably have been on the order of 19 percent, and Iran probably will be able to meet demand in the early 1990s with 25,000 to 28,000 MW of installed electric generating capacity.

Nevertheless, until recent weeks Tehran was proceeding with its nuclear power programs, and the Shah was continuing to push the concept of Iranian energy independence when the oil runs out. In addition to the four plants under construction, a letter of intent had been signed with a West German supplier for four more plants and negotiations for up to eight others were under way with French, US, and other Western suppliers. Thus far, the West German company has not received official notification of the cutback; it continues to work on site selection and related activities.

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The Military Program

Iran's top military procurement official has told US officials that there will be changes and postponements in military equipment acquisition schedules. Tehran will not go ahead with the purchase of 140 additional F-16 and 70 additional F-14 fighter aircraft, which it has been pressing the US Government to approve. Iran also has decided to forego the purchase of other fighter aircraft and several hundred self-propelled howitzers, equipment for which US sellers had provided specifications and price offers that Iran was expected to accept.

Budget and Payment Implications

Former Prime Minister Amuzegar has estimated that the nuclear/military cutbacks as well as some whittling down of an ambitious petrochemical program could save the government some \$8 billion to \$10 billion. But such savings would not be felt in the short term when Iran will have to meet the costs of increased benefits promised public sector employees and may have to step up imports of consumer goods to mollify unhappy workers hit by resurgent inflation. Moreover, Tehran already is committed to pay out over the next five years an estimated \$6 billion to \$8 billion for the four nuclear reactors under construction and \$10 billion to \$11 billion in military equipment purchases from the United States.

Savings over the longer term could be substantial. Postponement or cancellation of sophisticated new military programs would save several billion dollars. Using gas, the most likely alternative to nuclear power, could result in considerable savings in investment costs. Although fuel costs for nuclear facilities generally are substantially below those for conventional power plants, the advantages are eliminated when capital charges, including interest costs, are taken into account. For instance, a 1,384 MW gas-fired power station commissioned in July 1978 cost just \$340 million, whereas the 1,200 MW nuclear plants under construction will cost Iran \$1.5 billion to \$2.0 billion each, and additional ones could have cost almost double that. Iran's gas reserves are so large—an estimated 600 trillion cubic feet—that substantial amounts should be available to produce electric power as long as 40 to 50 years, even after other priority requirements are met.*

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* Other priority areas for the gas include injection in oilfields to extend their life, exports to the USSR— through a pipeline in operation since 1970 and a second to be completed in the early 1980s—and domestic household and industrial use.

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FRANCE: CHEMICAL ENRICHMENT PROCESS

France is continuing to seek international cooperation in the financing and construction of a small uranium enrichment plant using its chemical enrichment process. In announcing the process in May 1977, officials of the French Atomic Energy Commission (CEA) characterized it as virtually "proliferation-proof" and claimed that it is competitive with enrichment by gaseous diffusion for small plants. The timing of the announcement was chosen for political impact; it was made after the pronouncement of new US nuclear export and proliferation policies and immediately before an international nuclear power conference in Austria, where many countries expressed their intentions to acquire independent nuclear fuel cycle facilities. Paris has recently held bilateral discussions with its two major nuclear export rivals, the United States and West Germany, in an effort to gain economic and political support for the process.

If the process can successfully be developed, it will have obvious export application in conjunction with French sales of nuclear power reactors to countries desiring an independent enrichment capability. Several LDCs, faced with controls on nuclear exports such as those recently developed by the London Suppliers Group and in the US Nuclear Non-Proliferation Act, would probably seriously consider purchase of the process. Paris clearly hopes that its claims of proliferation resistance will fend off calls for the kind of export restrictions that have been associated with other enrichment processes.

Background

A detailed technical description of the French chemical process, which the French claim to have discovered in 1968, has not been made public. The technique is believed to be a variation of one of several long-known chemical exchange processes similar to solvent extraction in which the relative concentrations of uranium isotopes differ slightly between two solutions. Such processes have generally been considered uneconomical because of relatively high capital costs and the long time required to charge the plant.

CEA officials say that several small pilot facilities have been successfully operated since 1968. The French claim to have spent \$200 million on development and to have 500 people involved in ongoing research. Based on two French announcements, efficiency of energy use in the process apparently was improved in the last half of 1977.

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Plans

France plans to have a demonstration plant with an annual capacity of 50,000 to 100,000 separative work units (SWU) operational in the 1983-85 period. The process appears to be designed for ultimate application in plants of small to medium capacity: 300,000 to 3 million SWU per year, sufficient to supply the annual fuel requirements of at least three and as many as 35 medium-sized (600-megawatt) light water power reactors. The French admit that commercial application is unlikely before 1990.

Negotiations

The recent French demarches probably were motivated primarily by financial concerns. The French parliament, after careful scrutiny of the new CEA budget, appropriated only enough money to carry the development through the end of next year. France may also be seeking political support from other nuclear suppliers in the midst of proceedings of the US-sponsored International Nuclear Fuel Cycle Evaluation.

Bilateral discussions with both West Germany and the United States have continued at a leisurely pace, and important issues still must be resolved. The French reportedly want to control export licensing of the process even if the equipment is produced by another country. West Germany feels it must obtain approval of its British and Dutch partners in the URENCO centrifuge enrichment consortium before a formal arrangement with France can be made. The United States apparently is not yet convinced that the process is economically competitive.

Advantages

With the economics still indefinite, the major advantage for the French process lies in the reduction of the risk associated with international transfer of sensitive enrichment technology. Were the French claims generally accepted, this process could be the only enrichment process available to developing countries. According to CEA officials, their system "practically forbids the production of weapons-grade uranium" and there is "no possibility of cascade rearrangements" to upgrade the enrichment level beyond that required for power reactor fuel. Such shifts are possible with both the gaseous diffusion and gas ultracentrifuge processes now being used for uranium enrichment. Even the jet nozzle process that West Germany has contracted to provide to Brazil can theoretically be used to produce highly enriched uranium. The French emphasize their process is limited to the production of reactor-grade enriched

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uranium (only about 3 to 4 percent uranium-235) "because of criticality risks," that is, the risk of the accumulation of a critical mass of uranium within the plant.

Not a Panacea

Although the French have pledged to eschew exports of any plant designed to produce weapons-grade uranium, most of their nonproliferation claims appear to be faulty.

- The addition of a neutron-absorbing material—a simple procedure—would overcome the obstacle to high enrichment levels posed by the problem of criticality.
- The possibility of cascade rearrangement will depend on the final design of the plant, rather than the enrichment process alone.
- Although the French plants would not be suitable for the direct production of weapons-grade uranium—the French claim that 30 years would be needed to attain equilibrium production—the technology made available with such plants would permit the construction of small, difficult-to-detect facilities to produce reactor-grade material.
- The French chemical enrichment technology probably would be easier for an LDC to assimilate than other enrichment techniques.

Most importantly, the availability of plants for the production of reactor-grade enriched uranium could permit recipient countries to use "topping" plants—small facilities (10 to 20 percent of the capacity of the proposed French-made chemical plants)—employing any of several enrichment processes to produce highly enriched uranium from the reactor-grade material. Because the bulk of the separative work would be accomplished in the French plants—more energy is required per unit increase in the enrichment level at low enrichments than at high enrichments—the topping plants could be built with relatively crude indigenous technology. Such technology would not be feasible in a plant required to enrich natural uranium to weapons-grade levels. Countries which might otherwise refrain from undertaking a complex and expensive domestic enrichment program thus might be led to develop a standby capability to produce simple nuclear devices with a relatively small investment.

The only valid French argument for the "safety" of their process is the long time required to charge the plant. This constraint will assure that the enrichment operations can easily be monitored. Equilibrium time—the time it takes an enrichment plant

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filled with natural uranium to achieve the intended range of enrichment levels in the process equipment—is such that a change in product enrichment would be detected.

Thus, despite French claims, wide-scale application of the chemical enrichment process probably would not advance the cause of nuclear nonproliferation. Indeed, the current proliferation risks accompanying enrichment, primarily associated with the independent development of enrichment technology by other countries such as South Africa, are probably less than the risk attending the scattering of small enrichment plants throughout the developing world.

Finally, many observers feel that if the proliferation problem is not solved before 1990, the earliest the French process is likely to be in commercial application, the spread of sensitive nuclear technology will have gone beyond the point of no return. Under these circumstances, technical fixes such as the French enrichment process or even the elimination of pure plutonium in spent fuel reprocessing may be of limited use. Further nuclear proliferation will ultimately be determined by the political and security factors perceived in individual countries.

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ARGENTINA: A NUCLEAR POWER PLANT EXPORTER? *

By the early 1990s, Argentina should be technically capable of exporting a complete nuclear power plant of the CANDU heavy-water, natural-uranium type, including ancillary fuel-fabrication services. If it exercises this capability, it will become the first LDC to join the small group of countries able to supply power reactors. India, the only other LDC with a chance of matching Argentina's export performance, has indicated no inclination to do so.

Nuclear Background

Argentina's nuclear effort began in 1950 as part of the Peron government's drive for primacy in Latin America and the Third World. All subsequent governments have supported the program, which fits the average Argentine's view of his country as the natural leader of Latin America in terms of scientific and technical achievement. The cost of the program has never been seen as particularly onerous, largely because Argentina started early (from an already good scientific and industrial base) and stretched the work out over a long period.

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With nearly 30 years of experience in nuclear science and engineering, Argentina has developed a sizable cadre of competent nuclear personnel. Since the founding of the Argentine Nuclear Energy Commission (CNEA) in 1950, the country has established several nuclear research and training facilities and now has the only operating nuclear power plant in Latin America. Its first research reactor, designed and built entirely by Argentines, was completed in 1958. Construction of the first power reactor began in the mid-1960s, with completion in 1974.

Technical Capabilities and Progress

Argentina has drawn heavily on its own resources in building its nuclear power plants:

- It supplied engineering services, materials, hardware, and labor amounting to 40 percent by value of its first power plant, completed under contract with Siemens A.G. of West Germany.
- Buenos Aires is supplying inputs equal to 50 to 60 percent by value of its second plant, now being built under a contract with Atomic Energy of Canada, Ltd.
- We expect Argentina to supply as much as 60 percent of the equipment and 90 percent of the engineering and installation work for a third power plant; negotiations are under way with Canada and West Germany. The foreign contractor will have to supply pressurizers, automatic refueling equipment, and giant turbines.

Argentina also is taking steps to become self-sufficient in heavy water and in the nuclear fuel cycle itself. Construction is about to begin on a pilot plant for heavy water—used as the moderator/coolant in the CANDU reactor—and a full-scale facility is in the planning stages. A pilot-scale fuel-fabrication plant was completed last year; it is to be enlarged to start full-scale production by 1980. Chemical reprocessing of spent fuel was conducted on a laboratory scale as early as 1969, and construction of a pilot plant to reprocess spent fuel elements from the German-built plant is scheduled for completion by 1981.

Touching Base Abroad

As Argentine capabilities have grown, Buenos Aires has begun to export nuclear technology and equipment to other Latin American nations. The nuclear relationship

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Argentina: Production Capabilities for Key Elements
of Nuclear Power Stations

	Current	1980-85
Conventional construction and power system		
High-quality welding	Yes	Yes
High-stress concrete	Yes	Yes
Electrical contracting	Yes	Yes
Major electrical		
Switchyard equipment	Yes	Yes
Turbo-generators	Yes	Yes
Nuclear-scale turbines (megawatt)	No	No
Nuclear steam-supply system		
Conventional large-diameter steel piping	Yes	Yes
Valves and pumps, auxiliary	Yes	Yes
Large pumps and valves for reactor coolant	No	Yes
Nuclear steam generators	No	Yes
Internal equipment		
Pressure tubing	No	No
Control rods/drives	No	Yes
Pressurizers	No	No
Support equipment		
Fuel-reload machinery	No	No
Fuel-storage racks	No	Yes
Control panels	No	Partial
Technical skills for reactors		
Operation	Partial	Yes
Safety	Partial	Yes
Design and engineering	Partial	Yes
Nuclear fuel cycle		
Fuel technology		
Mining	Yes	Yes
Concentration	Yes	Yes
Chemical and machine processing for UO ₂	Yes (pilot)	Yes
Zirconium cladding (extrusion)	Yes (pilot)	Yes
Fuel assembly	Yes (pilot)	Yes
Heavy Water		
Distillate columns	No	No
Valves	No	No
Design and engineering	Yes	Yes
Reprocessing		
Chemical process	Yes	Yes
Fuel-chopping machines	No	Yes

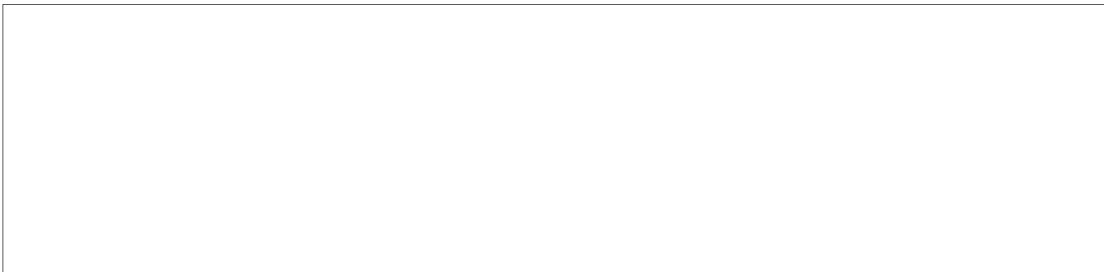
is farthest advanced with Peru. Under a March 1977 contract, Argentina is providing a complete research center including a zero-power research reactor and a 10-megawatt reactor for producing radioisotopes. Also included in the project will be equipment and training in radiation protection, uranium prospecting, ore treatment, and preparation of isotopes for industry and research.

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Argentina also is providing a research reactor and a uranium ore treatment plant to Bolivia and has signed nuclear supply and cooperation contracts with Uruguay and Ecuador. Cooperation agreements with several other Third World countries may eventually lead to further contracts. While these exports are being undertaken primarily for reasons of prestige and regional leadership, they are also necessary in order to make full use of Argentine productive capacity and trained manpower. We expect this trend to accelerate.

The Continuing Foreign Role

While developing its own capabilities, Argentina remains dependent on foreign support to master the technological skills needed to build its nuclear industry. Although substantial foreign help was—and is—required for Argentine nuclear power projects, Buenos Aires has been very successful in obtaining advanced technology from foreign contractors. We believe that these efforts will be equally successful in the future.



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Argentina's foot-dragging in formally adopting international safeguards is beginning to impede its nuclear program. The United States and Canada refuse to supply the full-scale heavy-water plant that Buenos Aires wants until Argentina adopts full-scope safeguards and, more importantly, renounces its plans for reprocessing. Since Argentina is not likely to alter its reprocessing intentions, it will probably be forced to build the heavy water facility itself with only the limited aid it can obtain by hiring individual foreign technicians.

Looking Ahead

About 1990, Argentina plans to start building a heavy-water nuclear power plant that is to be entirely Argentine-contracted and about 90 percent constructed and equipped from the country's own resources. Assuming continued foreign support, we see no reason why Argentina should not be able to carry out these plans.

We believe Argentina can complete by the late 1980s a plant to produce heavy water required in CANDU reactors. Argentina will also greatly expand its capabilities

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for fabricating natural uranium fuel for power reactors and for reprocessing spent fuel. CNEA already has produced prototype fuel elements for its first power plant and expects to complete facilities to produce zirconium-alloy cladding material this year. By 1979 it expects to be able to use the cladding material in a 40,000-meter-per-year tube plant using West German technology—greatly enhancing its fuel-fabrication capability.

Selling Nuclear Equipment

Over the next decade, the Argentine export effort will focus on research reactors and assistance to other LDCs in setting up nuclear research centers. Argentina also will likely step up assistance in uranium exploration, mining, and ore processing and concentrating.

Looking farther down the road, Argentina should by the early 1990s have achieved sufficient experience in nuclear construction and engineering and in producing high-technology equipment to consider exporting a complete nuclear power plant. It also might consider participating with an established nuclear supplier in selling a nuclear plant to a third country. Whether or not it will do so will depend heavily on how Buenos Aires evaluates the prestige to be gained from an export sale, which probably would delay by several years the construction of a fourth domestic nuclear power plant. If a market can be found, exporting would be a practical option since the country has ample unexploited hydroelectric potential.

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USSR-VENEZUELA-CUBA-SPAIN: OIL AGREEMENT

A swap of crude oil—involving the USSR, Venezuela, Cuba, and Spain—began quietly in July, after years of intermittent negotiations. Under the new arrangement, Venezuela will ship its crude to Cuba, which heretofore has been supplied exclusively by the USSR; the USSR, in turn, will deliver an equivalent amount of crude to the Spanish Government, a Venezuelan customer. Spanish and Soviet ships will continue to handle all transport. The initial agreement calls for Soviet and Venezuelan shipments of 10,000 b/d, 5 percent of the Soviet 1978 commitment to Cuba and one-half of Venezuela's contracted deliveries to Spain.

The principal reason for the agreement is the savings in transport costs. These savings will total about \$6.5 million annually; the two supply lines are each being

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shortened by about 4,800 kilometers. Few details are available on how the savings will be apportioned, but the USSR, Venezuela, and Spain probably will be the beneficiaries. With Cuba already getting Soviet oil at a cut-rate price—about \$8.10 per barrel, f.o.b.—it is not likely to receive further benefits.

If no hitches develop, Moscow may seek to expand the swap volume in order to further improve tanker use and free some ships to earn hard currency. About 20 percent of Soviet tanker capacity has been employed on the Cuban run, and one-half of the tankers have returned empty. [REDACTED]

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USSR: CONTRACT FOR GAS LIFT EQUIPMENT?

Moscow, after three years of shopping, signed a \$200 million to \$250 million contract earlier this month with a French-led consortium for gas lift equipment to be used at the Samotlor and Fedorovo oil fields in West Siberia. [REDACTED]

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The USSR had been close to signing a contract with a Japanese-led consortium—which included US firms—last summer but abruptly suspended negotiations in following the US Government's decision to control the sale of oil and gas equipment to the USSR.

Moscow apparently has decided that it must act this year to acquire the gas lift equipment needed to increase oil recovery and to slow the decline in oil output we expect in the early 1980s—at the giant Samotlor oil field. Samotlor is now operating at peak capacity and will provide nearly one-fourth of total Soviet oil output this year.

Soviet petroleum engineers strongly prefer equipment produced in the United States; however, Moscow is seeking an “all-European” supplier package to avoid US export license problems. The Japanese offer relied heavily on US-based suppliers for two key items—downhole equipment and computer systems.

Although the Japanese theoretically could have put together a non-US package, Soviet negotiators stated that Moscow was reluctant to award the Japanese such a substantial contract so soon after the signing of the recent Japan-PRC friendship treaty.

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The French claim they can obtain all the equipment in Western Europe. We agree, although some items would have to come from US subsidiaries. US firms and subsidiaries produce the most—and the best—downhole equipment. Meanwhile, US-based companies for their part are seeking advanced approval for the downhole equipment and computer systems. If successful, the US firms still may have a chance to participate in the deal.

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